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FINAL REPORT

Design and Performance/Measurement Simulation Studies for a ER-2 Sunphotometer

(NASA-CR-196782) DESIGN AND PERFORMANCE/MEASUREMENT SIMULATION STUDIES FOR A ER-2 SUNPHOTOMETER Final Report (Arizona Univ.) 6 p

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Grant Number: NAG 2-620

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Prepared by: J.A. Reagan, Q. Gao, and A. Ehsani

Documentation of Results

Work and results, including developed software, obtained under this grant (NAG 2-620) have been reported in various progress reports, an M.S. Thesis (by Q. Gao), and software programs (transmitted to Mr. John Livingston). The purpose of this final report is not to repeat this previously reported work. Rather, it is simply a documented listing of what has already been reported. This includes the following:

1. "Conceptual Design and Simulation of a Spectral Sunphotometer for the ER-2 Aircraft" - Final Report Part-II, August 12, 1991, 68 pp., prepared by J.A.Reagan, A. Ehsani, and Q. Gao.

2. "Continued Simulation and Design Studies for an ER-2 Sunphotometer" - Progress Report Part-III, July 31, 1992, 26 pp., prepared by J.A. Reagan, A. Ehsani, and Q. Gao.

3. "Simulation and Performance Studies of a Spectral Sunphotometer for the ER-2 Aircraft" - M.S. Thesis, Dept. of Electrical and Computer Engineering, University of Arizona, 139 pp., May, 1993. The Title Page, Acknowledgement, and Table of Contents of this thesis are attached as Appendix A.

4. Software and computational results for modeling airmass and diffuse light effects due to aerosols were provided in support of NASA Ames research on the effects of aerosols resulting from the Pinatubo volcanic eruptions. These results were included in two journal publications prepared under the direction and leadership of Dr. Philip B. Russell; the references for these articles are as follows:

   P.B. Russell et al., "Post Pinatubo Optical Depth Spectra vs. Latitude and Vortex Structure: Airborne Tracking Sunphotometer Measurements in AASE II," Geophys. Res. Lett., 20, pp. 2571-2574, 1993.

   P.B. Russell et al., "Pinatubo and Pre-Pinatubo Optical-Depth Spectra: Mauna Loa Measurements, Comparisons, Inferred Particle Size Distributions, Radiative Effects, and Relationships to Lidar Data," Journal Geophys. Res., 98, pp. 22,969-22,985, 1993.

APPENDIX A

SIMULATION AND PERFORMANCE STUDIES OF A SPECTRAL SUNPHOTOMETER FOR THE ER-2 AIRCRAFT

by

Qiang Gao

A Thesis Submitted to the Faculty of the

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

In Partial Fulfillment of the Requirements
For the Degree of

MASTER OF SCIENCE
WITH A MAJOR IN ELECTRICAL ENGINEERING

In the Graduate College

THE UNIVERSITY OF ARIZONA

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